

CANADIAN MARCONI COMPANY

SERVICE INSTRUCTIONS FOR MODELS 93-94

CIRCUIT

6 tube battery operated multi-wave (3 band super-heterodyne with tuned radio frequency stage and full automatic volume control.

FREQUENCY RANGE

Broadcast.....528-1630 KC (568-184 Metres)
Police.....1620-5250 KC (185-57 Metres)
Short Wave.....5.2-18 MC (57.7-16.7 Metres)

OUTPUT CIRCUIT

By the use of one R.V.C. 6C5, and one R.V.C. 19 Radiotron, a class B output system giving an undistorted output of 1.35 watts and a total output of 2 watts is obtained.

BATTERIES

(1) 6 volt storage battery required.

"B" and "C" Supply - No batteries are required the voltage being supplied through a mechanical vibrator and a power transformer, whose combined functions convert to A.C. step up, and rectify the six volts from the storage battery to supply the receiver with approximately 165 volts of D.C.

D.C. RESISTANCE OF INDUCTORS

Primary of #1 I.F. Transformer 61647.....5 ohms
Secondary of #1 I.F. Transformer 61647.....10 ohms
Primary of #2 I.F. Transformer 60248.....10 ohms
Secondary of #2 I.F. Transformer 602485 ohms
Primary of Driver Transformer 61471.....1100 ohms
Secondary of Driver Transformer 61471.....600 ohms
Primary of Speaker Transformer Mk. 93.....392 ohms
Primary of Speaker Transformer Mk. 94.....392 ohms
Speaker voice coil Mk. 93.....1.7 ohms
Speaker voice coil Mk. 94.....1.7 ohms

VOLTAGE READINGS

SOCKET PINS TO CHASSIS

	CAP	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8
R.V.C. 15 R.F. Amplifier	0	0	140	75	0	1.9	-	-	-
R.V.C. 6A8 Pentagrid Converter	0	0	0	140	75	-10	115	5.75	0
R.V.C. 15 I.F. Amplifier	0	4	140	75	0	1.9	-	-	-
R.V.C. 6Q7G Diode Det. A.V.C. 1st A.F.	0	0	0	55	0	0	-	5.75	1.3
R.V.C. 6C5 Driver	0	-	-	140	-	0	-	5.75	6
R.V.C. 19 Class B. Amplifier	0	5.75	150	4	4	150	--		

All readings taken with 1,000 ohm per volt meter volume control at maximum, gang capacitor at minimum and receiver on broadcast band.

RESISTANCE READINGS

Resistance readings from socket pins to chassis are not given in this model because the use of bias cells, and the new regulating type of electrolytic capacitors makes it impossible to give accurate readings. When checking any network of resistors it is policy to remove bias cells, and disconnect electrolytic capacitors from the circuit under test.

RADIOTRON COMPLEMENT

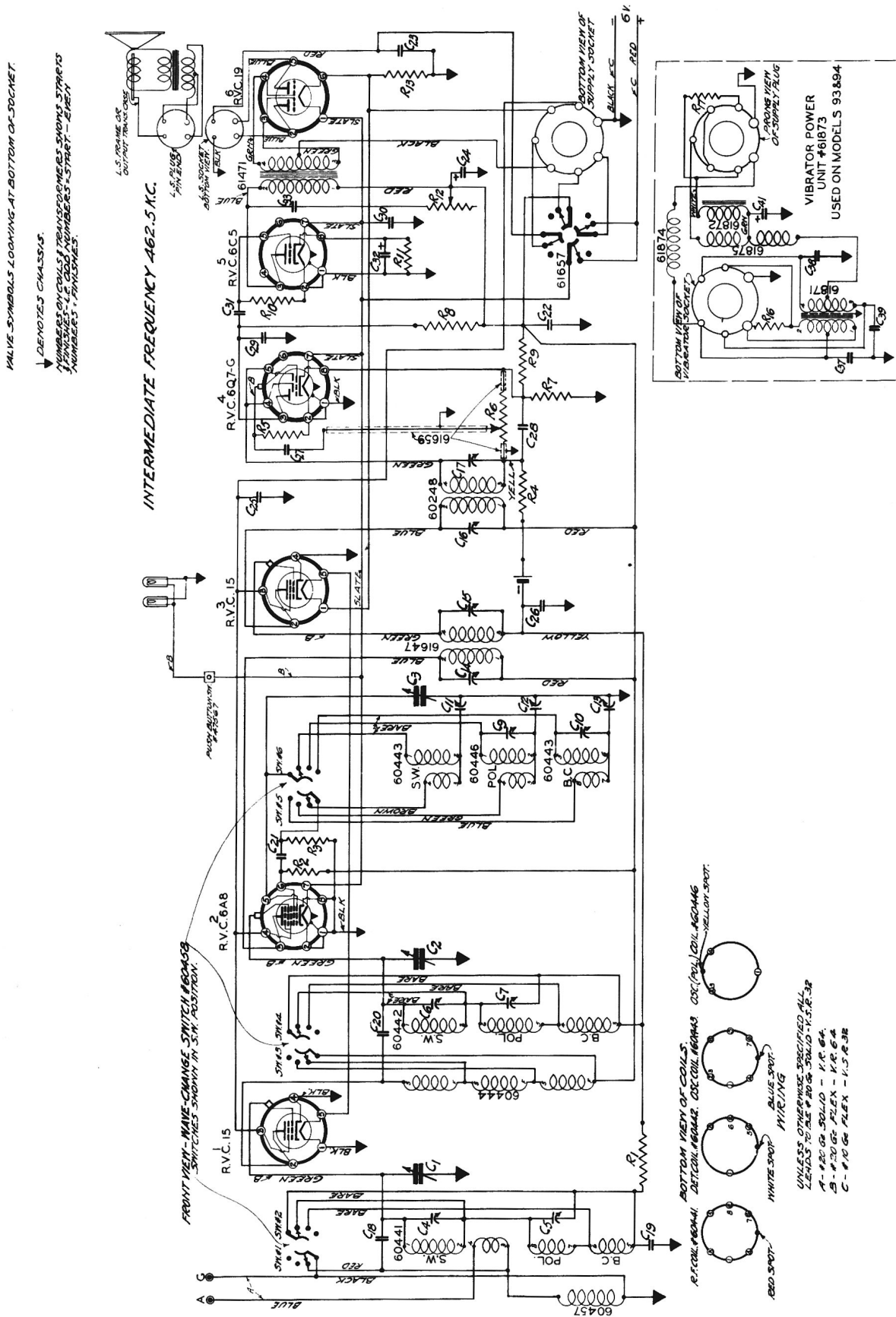
(1) R.V.C. 15.....R.F. Amplifier
(1) R.V.C. 6A8.....Pentagrid Converter
(1) R.V.C. 15.....I.F. Amplifier
(1) R.V.C. 6Q7G.....Diode Det., A.V.C. & 1st A.F. Amp.
(1) R.V.C. 6C5.....Driver
(1) R.V.C. 19.....Class B. Amplifier

LOUDSPEAKER

Model 93.....8" Permanent Magnet Dynamic
Model 94.....10" Permanent Magnet Dynamic

BATTERY CURRENT

.....2.6 Amps.



ALIGNMENT INSTRUCTIONS

In order to properly realign this receiver the radiotrician should have available an output meter and a well attenuated test oscillator capable of giving the following frequency fundamentals:-

- 462.5 KC for I.F. alignment.
- 1500 KC and 580 KC for broadcast band alignment.
- 4800 KC and 1720 KC for police band alignment.
- 16,000 KC and 5600 KC for short wave band alignment.

The manual volume control should always be kept at maximum, and the signal from the test oscillator should be kept as low as possible. In any case the signal should not be of sufficient strength to bring the automatic volume control into operation.

If a Cathode Ray Oscillograph is used instead of an output meter the vertical plates should be connected between the junction of R4, R6 and C28, i.e., the upper soldering lug on the volume control and chassis. The alignment should produce a round image, the top of which should be slightly flat, rather than a sharp peaked image.

ALIGNMENT OF I.F. TRANSFORMERS

Set gang capacitor at minimum capacity and supply a modulated 462.5 KC signal from a test oscillator to the control grid cap of the 6A8 converter tube through a 0.1 mfd. capacitor leaving the grid connector in place. Adjust in order C17, C16, C15 and C14 for maximum output. This operation should be checked to ascertain that maximum output has been obtained.

ALIGNMENT OF BROADCAST BAND

- (1) Set gang capacitor at maximum capacity (plates meshed).
- (2) Set dial pointer in a horizontal position on the left hand side, i.e., midway between the two scales.
- (3) Rotate tuning knob until pointer is at 1500 KC.
- (4) Supply a 1500 KC signal from a test oscillator to the aerial and ground leads.
- (5) Adjust broadcast oscillator trimmer C10 to tune in the 1500 KC signal.
- (6) Adjust R.F. trimmers C7 and C5 for maximum output.
- (7) Shift test oscillator to 580 KC.
- (8) Rotate the tuning capacitor until the 580 KC signal is reached.
- (9) Adjust broadcast oscillator tracking capacitor C13 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.
- 10) Recheck at 1500 KC.

ALIGNMENT OF POLICE BAND

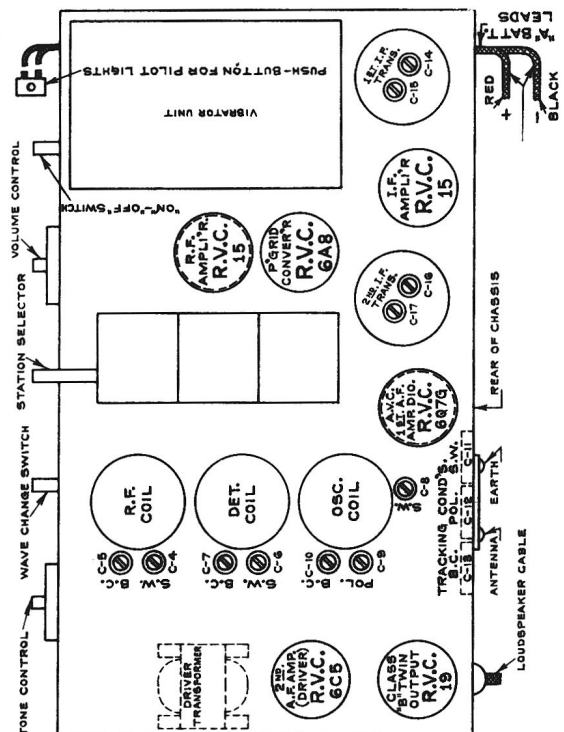
- (1) Turn wave change switch to police band - centre position.
- (2) Rotate tuning knob until pointer is at 4800 KC marking on dial.

Alignment of Police Band - Cont'd

- (3) Supply a 4800 KC signal from test oscillator to the aerial and ground leads.
- (4) Adjust police band oscillator trimmer C9 while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.

ALIGNMENT OF SHORT WAVE BAND

- (1) Turn wave change switch to short wave band extreme left.
- (2) Rotate tuning knob until pointer is at 16 MC marking on dial.
- (3) Supply a 16 MC signal from test oscillator to aerial and ground leads.
- (4) Adjust short wave R.F. trimmers C6 and C4 for maximum output.
- (5) Shift test oscillator to 5600 KC.
- (6) Rotate tuning capacitor until 5600 KC signal is reached.
- (7) Adjust short wave oscillator tracking capacitor C11, while rocking the gang capacitor to and fro past the signal until the combination of adjustments giving the greatest reading of the output meter is obtained.
- (8) Recheck 16 MC alignment.



MODELS 93-94

PARTS LIST

TYPE NO.	DESCRIPTION	PRICE
60464	Belt for drive.....	\$.10
61880	Bracket for holding C24.....	.05
60465	Bracket for dial mtg.....	.15
61819	Button.....	.10
61804	Cabinet Model 93.....	P.O.A.
61805	Cabinet Model 94.....	P.O.A.
G-832	Cap for Goat shield.....	.05
SD-1001	Cell 1½ V. grid bias.....	.20
61630	Chassis assy. with vibrator.....	P.O.A.
60457	Choke antenna.....	.50
60444	Choke assy. R.F. plate.....	.75
61872	Choke filter.....	1.50
61874	Choke assy. R.F. (in power unit).....	.50
61875	Choke assy. R.F. (in power unit 2 windings on former).....	.50
61489	Clamp for A & G leads.....	.05
60310	Clamp for holding dial plate assy....	.05
SD-1005	Clip "A" battery plus.....	.15
SD-1006	Clip "A" battery minus.....	.15
60447	Coil assy. R.F.....	1.00
60448	Coil assy. detector.....	1.00
60449	Coil assy. osc. (broadcast & short wave).....	1.00
60446	Coil assy. osc. (police band).....	.50
61621B	Cone for speaker Model 93.....	1.50
61622E	Cone & voice coil assy. Model 94.....	1.50
61654	Control volume.....	1.00
61655	Control tone.....	1.00
SD-1002	Connector grid cap (std.).....	.05
SD-1007	Connector grid cap (midget).....	.05
60425	Crystal.....	.25
61670	Dial.....	1.00
60316	Drive planetary.....	.80
60463	Drum assy.....	.30
60509	Gasket for dial scale.....	.05
60511	Hand.....	.10
SD-1008	Holder for bias cell (insulated).....	.10
SD-1009	Holder for bias cell.....	.10
61861	Indicator assy. (wave band).....	.50
2R 132	x 1 3/8" knob (dual top).....	.25
2R 132	x 7/8" knob (dual bottom).....	.25
2R 132	x 1 1/8" knob (4 required).....	.25
61663	Mat (blk.finish behind dial scale)...	.05
SD-1010	Pilot lamps, bayonet type (2 required).....	.15
61666	Plate for holding dial scale and mat to cond. assy.....	.50
61889	Plug (7 prong) for power unit).....	.15
47567	Push Button assy.....	.15
61667	Pulley assy. for drive belt.....	.10
SD-1012	Receptacles bayonet type for pilot lights.....	.15
60514	Shaft pointer.....	.10
61621	Speaker Mk. 93.....	10.00
61622	Speaker Mk. 94.....	12.00
60515	Spring tension for pointer shaft.....	.10
60495	Spring for drive belt.....	.10
G-840	Shield for tubes (1 half).....	.15
G-727A	Shield for 6Q7 tube.....	.10
61657	Switch on-off.....	.60
60458	Switch wave change.....	1.50
42783	Terminal strip single.....	.05
49014	Terminal strip double.....	.05
44417	Terminal strip double (in power unit).....	.05
61871	Transformer assy. (power).....	3.00
61647	Transformer I.F. #1.....	1.80
60248	Transformer I.F. #2.....	1.80
61471	Transformer driver.....	2.50
61621C	Transformer speaker Mk. 93.....	2.50
61622C	Transformer speaker Mk. 94.....	2.50
SD-1011	Vibrator (Synchronous type).....	4.00

Prices subject to change without notice

PARTS LIST Cont'd

CAPACITORS

Ref.	Capacity	Rating	Type	Type No.	Price
C1	10- 490 MMF		3 gang)		
C2	10- 490 MMF		)	61662	\$3.50
C3	10- 490 MMF		variable)		
C4	3- 30 MMF		adjustable)	60300	.80
C5	3- 30 MMF		adjustable)		
C6	3- 30 MMF		adjustable)	60300	.80
C7	3- 30 MMF		adjustable)		
C9	3- 30 MMF		adjustable)	60300	.80
C10	3- 30 MMF		adjustable)		
C11	1900-3800 MMF		adjustable	45172	.50
C12	1000-1500 MMF		adjustable	60246	.50
C13	350- 750 MMF		adjustable	45715	.50
C14	105- 445 MMF		adjustable)	60283	.50
C15	55- 250 MMF		adjustable)		
C16	55- 250 MMF		adjustable)		
C17	105- 445 MMF		adjustable)	60283	.50
C18	7.5 MMF		mica		.30
C19	0.05 MFD	200 V.	tubular		.30
C20	10 MMF		mica		.30
C21	250 MMF		mica		.30
C22	0.25 MFD	300 V.	tubular		.30
C23	0.01 MFD	400 V.	tubular		.40
C24	8 MFD	300 W.V.	dry. elect.	43507	1.00
C25	0.1 MFD	200 V.	tubular		.30
C26	0.05MFD	200 V.	tubular		.30
C27	0.02MFD	400 V.	tubular		.40
C28	100 MMF		mica		.30
C29	250 MMF		mica		.30
C30	0.5 MFD	200 V.	tubular		.50
C31	0.02 MFD	600 V.	tubular		.40
C32	10 MFD	25 V.	dry elect.		.75
C33	0.05 MFD	300 V.	tubular		.30
C37	0.5 MFD	200 V.	tubular		.50
C38	0.01 MFD	700 V.	tubular		.40
C39	0.01 MFD	700 V.	tubular		.40
C41	8 MFD	300 W.V.	dry elect.		1.00

RESISTORS

Ref.	Resistance	Rating	Price
R1	100,000	ohms	1 watt .25
R2	10,000	ohms	1 watt .25
R3	35,000	ohms	1 watt .25
R4	1	megohm	1 watt .25
R5	0.5	megohm	1 watt .25
R6	0.5	megohm	volume control) 61654 1.00
R7	1,000	ohms	1 watt .25
R8	0.5	megohm	1 watt .25
R9	100,000	ohms	1 watt .25
R10	0.5	megohm	1 watt .25
R11	5,000	ohms	1 watt .25
R12	50,000	ohms	tone control 61655 1.00
R13	100	ohms	1 watt .25
R16	200	ohms	1 watt .25
R17	20,000	ohms	1 watt .25

Price 15 cents

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